been previously known only from northern Central America (Guatemala, Honduras, and probably Nicaragua).—*Robert L. Wilbur, Department of Botany, Duke University, Durham, North Carolina 27706.*

NOTES ON PANAMANIAN APOCYNACEAE

Since the publication of the account of the Apocynaceae for the *Flora of Panama* (Ann. Missouri Bot. Gard. 57: 59–130. 1970), a number of noteworthy additional collections have become available. These include several species new to Panama, two representing genera previously unreported outside Amazonia and another a genus new to North America, the first fruiting collection of several species, new species of *Prestonia*, *Mandevilla*, *Stenosolen*, and *Malouetia*, and some significant range extensions within Panama. All specimens referred to are at MO unless otherwise noted.

1. *Aspidosperma darienense* Woods. *ex* Dwyer, Ann. Missouri Bot. Gard. 53: 105. 1966. This species has been previously known only from the holotype collection, *Sexton & Knight s.n.*, from Darién Province between Río Chucunaque and Río Canglón. A second collection of *Aspidosperma* from the same general area matches the type. This collection, *Duke 8589*, from Darién Province along the Río Chucunaque between Río Membrillo and Río Subcuti, is in fruit, making possible the description of the fruit of *A. darienense*. The fruit is a woody follicle, in the form of an asymmetrically truncated circle (unequally convex-plane in Woodson's terminology) 6.5 cm in longest diameter and 4.7 cm in shortest diameter. It is smooth, flat with no midrib, conspicuously yellow puberulent, and lacks a stipe. The seeds are thin, flat, concentrically winged, 4.5 cm in shortest diameter, 6.2–6.5 cm in longest diameter with a 5-cm-long funicle. The tree is described as 8 inches d.b.h. with a fluted trunk. The fluted trunk supports Dwyer's placement of *A. darienense* in series *Nitida*, but the non-verrucose fruit separates it radically from other species of that series.

2. *Aspidosperma marcgravianum* Woods., Ann. Missouri Bot. Gard. 38: 170. 1951. A second species of *Aspidosperma* with fluted trunk also occurs in Panama. This species is represented by *Dressler 3440* with both flowers and young fruits. The collection was not named by Nowicke (Ann. Missouri Bot. Gard. 57: 84. 1970), although she discussed it under *A. darienense*. The specimen matches Venezuelan material of *A. marcgravianum* Woods. (e.g. *Steyermark 86928*) as well as the Brazilian type. *Aspidosperma marcgravianum* is closely related to *A. excelsum* Benth. but can be distinguished by its smoother lower leaf surface and stipitate fruit. In Panama, *A. marcgravianum* is a large tree, commonly reaching 30 meters in height. It has a conspicuously fluted trunk and is relatively common in the tropical wet forest life zone of Santa Rita Ridge, Colón Province.

3. *Aspidosperma cruentum* Woods., Amer. Jour. Bot. 22: 684. 1935. The commonest Panamanian species of *Aspidosperma* was treated by Woodson (Ann. Missouri Bot. Gard. 38: 192. 1951) and in the *Flora of Panama* as *A. megalo-*

carpon. Müll.-Arg. Woodson had not seen the type of *A. megalocarpon*, however. Gómez-Pompa (Inst. Méx. Rec. Nat. Renov. 94–99. 1966), after studying the type, pointed out that Woodson's interpretation was incorrect and that the name of *A. megalocarpon* should instead be applied to the plant treated by Woodson (Ann. Missouri Bot. Gard. 38: 178. 1951) as *A. stegomeris* (Woods.) Woods. The earliest name for the common Panamanian species is *A. cruentum*.

4. *Aspidosperma megalocarpon* Müll.-Arg. Linnaea 30: 400. 1860. The real *A. megalocarpon*, known from Veracruz, Mexico, to the Osa Peninsula, Costa Rica, has also been recently collected in Panama, bringing to four the known Panamanian species of *Aspidosperma*. The Panamanian collection of *A. megalocarpon* is *Croat 22450* from the Burica Peninsula of Chiriquí Province. This species can easily be told from *A. cruentum* by the conspicuous and more widely separated secondary veins of its leaves, its larger flowers, and by the loose, wrinkled surface of its essentially glabrous fruit.

5. *Laxoplumeria tessmannii* Mgf., Notizbl. Bot. Gart. Berlin-Dahlem 9: 981. 1926. Another significant addition to the Panamanian flora is the distinctive genus *Laxoplumeria*. This rarely collected genus has been previously known only from Amazonian Peru and Brazil, each of its three species being represented in herbaria by only one or two collections (see Monachino, Phytologia 3: 67–70. 1949). The Panamanian material (*Gentry 1607*) is in fruit only so that its specific identification must remain tentative. In Monachino's key its 2–5-cm-long petioles relate it to both *L. tessmannii* and *L. baehniana* Monachino. Its 10–12-cm-long (in fruit) inflorescence distinguishes it from the latter. I have seen no material of *L. tessmannii*, apparently known only from the Peruvian type collection, but a photograph of the type (Field Museum Neg. 4386) seems to match the Panamanian plant. Although *L. tessmannii* has a puberulous inflorescence while the Panamanian material does not, the inflorescence is probably glabrate in fruit. The only known fruiting collection of *L. baehniana* (*Krukoff 5720*, F, MO) has similar but shorter fruits 20–31 (–38 at NY *fide* Monachino) cm long; the fruit of *L. tessmannii* is unknown.

The Panamanian plant is a tall lactiferous tree reaching 25 meters in height with pendent follicles 40–50 cm long and 4–6 mm wide. The seeds are flat, pointed, 2.2–2.8 cm long and 3 mm wide, densely pubescent with long (ca. 1 cm), brown trichomes. Juvenile trees are reasonably abundant in the premontane wet forest area of Pipeline Road, Canal Zone, but only a single mature individual is known.

6. *Macoubea sprucei* (Muell.-Arg.) Mgf., Notizbl. Bot. Gart. Berlin-Dahlem 14: 179. 1938. *Macoubea* is another genus of Amazonian trees which has not previously been reported from Panama or North America. The Panamanian specimens, all in fruit, seem to match *M. sprucei*, which has been collected as far northwest as Panure on the Rio Uaupes, Brazil. Dr. F. Markgraf, who kindly identified the Panamanian plant, notes that "the unripe seeds have the many-grooved testa of *Macoubea* and the hemisyncarpous fruit is a character that sometimes occurs in this genus. I saw such a case in *M. sprucei* from Rio Urubu,

Brazilian Amazonia (*G. T. Prance et al. 3739* (NY)). This gap between Amazonia and Panama is large, and without flowers a determination is not absolutely certain." The four Panamanian collections, all from the tropical wet forest life zone of Panamá Province between kilometers 14 and 20 on the El Llano-Carti road, include *Kennedy, Dressler & Mahler 2411*, 13 Feb. 1973; *Kennedy 2518*, 20 Feb. 1973; *Liesner 1145a*, 26–27 Mar. 1973; and *Correa, Dressler, Carrasquilla &Mendieta 1847*, 20 Feb. 1973. The species is described as a tree 5–6 m tall with latex and a green fruit turning brown at maturity. The fruit is syncarpous, more or less spheroidal, separated into two halves by a shallow longitudinal groove. The only other genus of Panamanian Apocynaceae to have syncarpous fruits and opposite leaves is *Lacmellea*. Its furrowed fruit and much larger leaves readily distinguish *M. sprucei* from *Lacmellea*.

7. *Bonafousia undulata* (Vahl) A. DC., Prodr. 8: 359. 1844. This species was reported by Nowicke in the *Flora of Panama* on the basis of a single collection. It proves too be a locally common shrub in the tropical wet forest life zone of eastern Panama. Dr. Robert Dressler informs me that he has examined the type of *Stemmadenia nervosa* Standl. & L. Wms., which proves to be synonymous with *B. undulata*, extending the range of this species to Costa Rica. Additional collections examined include *Correa et al. 791*, *Dwyer & Gentry 9387*, *Correa & Dressler 645*, *Gentry 6577*, and *Duke 15271*, all from Santa Rita Ridge, Colón Province, and *Gentry 5812* from north of El Llano in Panama Province near the San Blas border. Most of these specimens had been incorrectly determined as *Ervatamia cumingiana* (DC.) Markgraf, and duplicates were presumably distributed under that name.

8. *Peltastes colombianus* Woods., Ann. Missouri Bot. Gard. 19: 378. 1932. Only three collections of this genus were reported by Nowicke, one from the Canal Zone and two from lowland Chiriquí Province. Additional collections including *Gentry & Dressler 1971* from Pipeline Road, Canal Zone, and *Gentry 5760* from Cerro Campana, Panamá Province, as well as sterile plants seen in various parts of eastern Panama close most of the supposed distributional gap between *P. isthmicus* Woods. and the earlier *P. colombianus*. When he separated the Central American plant as a new species on the basis of its geographical disjunction and larger corollas, Woodson (Ann. Missouri Bot. Gard. 23: 197. 1936) had seen only a single flowering specimen of it. The floral dimensions given by Nowicke for *P. isthmicus* included smaller flowers than those described by Woodson, and the recent collections cited above include yet smaller flowers (corollas 5–6 cm long in *Gentry & Dressler 1971*), well within the range of variation of the otherwise identical *P. colombianus*. Since both characters used to separate the two species break down, *P. isthmicus* should be regarded as a junior synonym of *P. colombianus*, another example of the unreliability of absolute flower size as a specific character for large-flowered species of sympetalae (*cf.* many Bignoniaceae).

9. *Odontadenia macrantha* (R. & S.) Mgf., Fl. Surinam. 4, pt. 1: 461. 1937. The fruit of this well known species was described by Woodson (Ann. Missouri

Bot. Gard. 22: 298. 1935, under *O. hoffmannseggiana*), but its description was omitted from the treatment in *Flora of Panama*. A recent collection (*Croat 16597*) from Pipeline Road, Canal Zone, is the first fruiting specimen from Panama. The follicles, noteworthy as being significantly thicker than the 1–2 cm diameter described by Woodson but according well with the 4 cm diameter recorded by Markgraf (Pulle, Fl. Surinam 4(1): 462. 1937), are stout, divergent at an angle of about 45 degrees, 14–15 cm long and about 4.5 cm in diameter. Another interesting note on this species is that its flowers have a strong and distinctive odor of cloves. Gaps in the conspicuously broken geographical distribution (noted by Woodson, Ann. Missouri Bot. Gard. 22: 274) of *O. macrantha* are lessened by several additional collections from Panama including, besides the Croat collection cited above, *Gentry 4798* from Pipeline Road Canal Zone, *Gentry 4980* from near the junction of the Ríos Espavé and Bayano in eastern Panamá Province, and *Gentry 4549*, the first Darién Province collection from near El Real.

It should be noted that the correct name of this species is *O. macrantha* rather than *O. grandiflora* (G. F. W. Mey.) Miq. This was first pointed out by Markgraf (Notizbl. Bot. Gart. Berlin-Dahlem 9: 461–462. 1926) and accepted by Macbride (Field Mus. Publ. Bot. 13(5): 444. 1959) and others but apparently overlooked by Woodson (N. Amer. Fl. 29: 168. 1938) and in the *Flora of Panama* treatment. Markgraf's argument is that *O. grandiflora* Miq. was based on a different type than *Echites grandiflora* G. F. W. Mey. so that the latter's transferal to *Odontadenia* by Kuntze made it a later homonym in that genus. The next oldest basionym for the species is*Echites macrantha* R. & S. which must be the name adopted in *Odontadenia*.

10. *Prestonia allenii* Woods., Ann. Missouri Bot. Gard. 27: 332. 1940. Known to Nowicke only from the type collection (*Allen & Alston 1855*) from El Valle, Coclé Province, additional collections indicate that this species is widespread though uncommon in the tropical wet forest life zone. It is now also known from Colón Province (*Dressler & Lallathin 9025*, Santa Rita Ridge) and Panamá Province (*Gentry 5575*, north of El Llano near San Blas border). A fruiting collection (*Lewis et al. 287*, 2–3 mi. S of Goofy Lake, road to Cerro Jefe) may be also referable to *P. allenii*. It has been determined as *P. ipomaeifolia* DC. but the old calyx lobes reach 21 mm in length. Unfortunately neither annulus nor squamellae are apparent so that it can only be related to *P. allenii* rather than *P. remediorum* Woods. or *P. wedelii* Woods. through tenuous characters of leaf pubescence and by its collection locality. The follicles of this specimen are like those of *P. ipomaeifolia*, stout, widely diverging, pubescent, 9 cm long and 1.5 cm in diameter at the widest point. This would constitute the first collection of mature fruit for any of these three large-calyxed species.

11. *Prestonia concolor* (Blake) Woods. *in* Standl. & Record, Field Mus. Publ. Bot. 12: 327. 1936. This species, previously known only from Belize (formerly British Honduras) and Guatemala, is recorded for the first time from Panama. The single Panamanian collection, *Gentry 2804*, is from the top of the fila above Almirante, Bocas del Toro Province, and was determined by Prof.

F. Markgraf of Zürich. In the *Flora of Panama* this species keys out between *P. exserta* and *P. obovata*, agreeing with the former in its short (5 mm) calyx lobes and with the latter in its thick concrescent nectaries. Woodson (Ann. Missouri Bot. Gard. 23: 299. 1936) keys it out with *P. obovata* from which he separates it by its shorter calyx lobes and simple (*i.e. racemose*) inflorescence, longer than the leaves. The leaves of *P. concolor* are most similar to those of *P. portobellensis* among the other Panamanian species. Besides flowers, the Panamanian collection contains fruits, previously unknown for this species. The follicles of *P. concolor* are long and slender, somewhat agglutinated when young, 37–38 cm long and 4–5 mm wide, subglabrous with a few very short, scattered, inconspicuous trichomes. The seeds are 1.0–1.2 cm long with a whitish coma ca. 4 cm long.

12. *Prestonia tysonii* A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, dense ferrugineo-tomentulosis. *Folia* ovata, abrupte acuminata, basi rotundata, supra hispido-velutina, subtus dense velutino-tomentosa. *Inflorescentia* densa, ferrugineo-tomentosa. Lobi *calycis* anguste ovati, acuti, 4–5 mm longi; squamellis triangularibus. *Corolla hypocrateriformis*, strigoso-velutina apice tubi et in lobis, tubo 5–6 mm longo, appendicibus epistaminalibus annulum faucis attingentibus. *Stamina* in parte superna faucis inserta. *Pistillum* 5 mm longum, ovario glabro, nectariis haud concrescentibus. *Follicula* 29–30 cm longa, ca. 5 mm lata, velutino-tomentosa.

Vine, the stems terete, densely ferruginous tomentose. *Leaves* elliptic-ovate to broadly ovate, shortly acuminate, the base rounded, 8–13 cm long and 4–9.5 cm wide, above hispid-velutinous with trichomes scattered over surface and congested on main veins, below densely and evenly velutinous-tomentose, the indument orangish tan, petioles 5–10 mm long, ferruginous tomentose. *Inflorescence* dense, subumbellate, ferruginous tomentose. *Calyx* lobes narrowly ovate, acute or shortly acuminate, 4–5 mm long and ca. 2 mm wide at base, appressed-velutinous, the squamellae triangular, blunt-tipped, pubescent without, 1 mm long. *Corolla* salverform, strigose-velutinous at top of tube and on lobes without, the tube 5–6 mm long and 1.5 mm wide at top, epistaminal appendages reaching the faucal annulus, ca. 2 mm long, the faucal annulus somewhat thickened. *Stamens* inserted in upper third of corolla tube, the anthers sagittate, 4 mm long, glabrous, the tips exserted. *Pistil* 5 mm long, ovary 1.5 mm long, glabrous, the nectaries separate, thin, petaloid, to 1 mm long. *Follicles* long and narrow, united at tips, 29–30 cm long, ca. 5 mm wide, velutinous-tomentose; immature seeds with coma ca. 2 cm long.

Holotype: PANAMA. PANAMA: Cerro Jefe in Clusia forest at 3000 ft., fruits united, vine, 27 Jan. 1966, *Tyson, Dwyer & Blum 3214* (MO).

This species belongs to Woodson's (Ann. Missouri Bot. Gard. 23: 276–367. 1936) section *Tomentosae* on the basis of its appendiculate, pubescent corolla and large calyx lobes. However, its long, narrow follicles, joined at the ends, are remarkably different from the short, stout, widely divaricate follicles of most other species of section *Tomentosae*. The only species known to me whose fruit even approaches that of *P. tysonii* is the very different *P. riedelii* (Muell.-Arg.) Mgf. which ranges from southern Peru and southern Brazil to Argentina.

Since the fruits of many species are unknown it is likely that other species of section *Tomentosae* may also be found to have narrow elongate follicles. *Prestonia tysonii* is also very unusual for the small size of its corolla. Its 5–6-mm-long corolla tube is less than half as long as that of all other species of section *Tomentosae* with the exception of *P. parviflora* Benth. of Cundinamarca, Colombia. Although *P. parviflora* is probably the closest ally of *P. tysonii*, it differs (*fide* Woodson's description) in elliptic leaves, shorter (1 mm) wholly included epistaminal appendages, acuminate corolla lobes, and stamen insertion at middle of the corolla tube. In Nowicke's treatment for the *Flora of Panama P. tysonii* keys out with *P. ipomaeifolia* DC., from which it is easily distinguished by its much smaller flowers and long, narrow follicles.

13. *Prestonia lenticellata* A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, puberulis, lenticellis prominentibus suberosis. *Folia* obovata, abrupte acuminata, basi anguste subcordata, supra glabrescentia, subtus puberula. *Inflorescentia* simplex, puberula. Calyx lobis lanceolatis, puberulis, 10–14 mm longis; squamellis triangularibus. *Corolla* hypocrateriformis, extus puberula, intus villosa in fauce, tubo 1.2–1.5 cm longo, appendicibus epistaminalibus annulum faucis superantibus. *Stamina* in parte superna faucis inserta. *Pistillum* 1.7–1.8 cm longum, ovario pubescenti, nectariis haud concrescentibus. *Follicula* ignota.

Vine, the stems terete, puberulous when young, glabrescent, with prominent raised corky lenticels when young, these coalescing and becoming suberous when older. *Leaves* obovate or obovate-elliptic, very abruptly short acuminate, broadly tapering to a narrowly subcordate base, 15–25 cm long and 9.5–18 cm wide, above mostly glabrescent, slightly puberulous near main veins, below puberulous with evenly scattered short trichomes, especially along the veins, the veins strongly raised below, lower secondary veins making 90 degree angle with midvein, uppermost veins a ± 60 degree angle, the secondary veins connected by an equally conspicuous continuous submarginal vein never more than 3 mm from margin, petioles ca. 1 cm long, puberulous. *Inflorescence* unbranched, 6–17-flowered, with subulate bracts to 8 mm long, the rachis and pedicels puberulous. *Calyx* lobes lanceolate, acuminate, 10–14 mm long and 3–5 mm wide, puberulous, the squamellae triangular, pointed or bifid, often serrate, 1.5–2 mm long. *Corolla* salverform, densely puberulous without, villous at top of throat within, the tube 1.2–1.5 cm long, epistaminal appendages exceeding faucal annulus, ca. 4 mm long. *Stamens* inserted toward top of corolla tube, the anthers sagittate, 5 mm long, pubescent, partially exserted. *Pistil* 1.7–1.8 cm long, ovary 1.5–2 mm long, densely pubescent, the nectaries separate, thick, ca. 2 mm long, slightly exceeding ovary. *Follicles* unknown.

Holotype: PANAMA: PANAMA: El Llano-Carti highway, about 16 km N of El Llano; vine, flowers yellow, crown white, 23 Mar. 1973, *Dressler 4303* (MO; isotypes PMA and to be distributed).

Additional collections examined: PANAMA. COLÓN: Santa Rita Ridge, flowers yellow, milky sap, 1 Mar. 1971, *Croat 13876* (MO). PANAMÁ: El Llano-Carti road, 16 km N of El Llano, 23 Mar. 1973, *Kennedy 2907* (MO, SCZ).

This species is known from three collections, all from the tropical wet forest life zone of eastern Panama.

This very distinctive plant appears to be intermediate between Woodson's (1936) sections *Annulares* and *Tomentosae*. It is easily distinguished from all species of section *Annulares* by its conspicuously puberulous corolla and thus keys to section *Tomentosae*. However, its not-at-all ferruginous, relatively inconspicuously puberulous leaves, stems and calyces are quite anomalous in section *Tomentosae*. Its macroscopic appearance is more that of section *Annulares*. On the basis of its exserted epistaminal appendages, simple many-flowered inflorescence, pubescent anthers, corolla dimensions, and nectaries surpassing the ovary, it keys to *P. calycina* Muell.-Arg. That species, known only from southern Brazil and adjacent Paraguay, is totally different in ferruginous pubescence on all parts and a glabrous ovary. In the *Flora of Panama* this species keys out with *P. ipomaeifolia*, from which it differs most obviously in its relatively sparse, non-rufescent tomentum. *Prestonia lenticellata* is easily separated, even vegetatively, from all species represented in the herbarium of the Missouri Botanical Garden by its large, almost bullate leaves and conspicuous, raised, corky lenticels.

14. *Forsteronia peninsularis* Woods., Ann. Missouri Bot. Gard. 22: 215. 1935. Several recent Panamanian collections agree with this species, previously known only from Guatemala and British Honduras. These include *Dwyer & Correa 8422* from Santa Rita Ridge, Colón Province, *Dressler & Williams 3960* from Cerro Campana, Panamá Province, *Duke 11894* from Loma Prieta, Los Santos Province, and *Foster 950* and *Croat 14000* both from Barro Colorado Island, Canal Zone. These specimens are noteworthy in their uniform notation of yellow flowers in contrast to the greenish-white flowers mentioned by Woodson (Ann. Missouri Bot. Gard. 22: 158) from British Honduras. This species has smaller leaves than either of the other two species of *Forsteronia* reported from Panama. In the generic key in *Flora of Panama* its thyrsiform inflorescence distinguishes it from *F. spicata* (Jacq.) G. Mey., while the presence of hairs in the axils of the veins beneath separates it from *F. viridescens* Blake. The nerve axils also differ from those of *F. spicata* in having sunken domatia rather than external tufts of trichomes and the base of the midvein above lacks the glands of the other two species.

15. *Rauvolfia sarapiquensis* Woods., Ann. Missouri Bot. Gard. 28: 271. 1941. A collection from Monte Rey, above Boquete, extends the range of this distinctive species, previously known only from two gatherings in adjacent Costa Rica, into Chiriquí Province. The field notes on *Croat & Porter 15705* note that the specimens are from a tree 7 m tall with greenish white flowers, growing in disturbed cloud forest. Its many-flowered, much-branched inflorescences and rather leathery leaves with very inconspicuous almost transverse secondary veins make the species unmistakable. The leaves are markedly like those of many species of Guttiferae.

The descriptions of the following three new species were provided by F. Markgraf of Zürich, current expert on the Apocynaceae. I have added short English descriptions and brief discussions of important characters for separating them from other Panamanian species. Several collections not seen by Markgraf are included in the listings of specimens cited.

16. *Mandevilla campanulata* Markgraf, sp. nov.

Frutex scandens glaber. *Folia* coriacea, glabra, elliptico-oblonga, apice longiuscule (8–10 mm) acuminata, basi cuneata, 8–11 × 2–2.5 cm; petiolus 5 mm longus; costa supra prope basin laminae glandulifera, ceterum eglandulosa, nervi laterales 10–11 paria, arcuati et arcuato-coniuncti, tertiarii subtus distincti, horizontales. *Inflorescentiae* axillares, alternae, semel dichotomae, pauciflorae, pedunculus 0.5–1 cm longus, ramuli bracteolis late ovato-acuminatis, 0.5 mm longis, 1 mm latis instructi. *Pedicelli* 1.5 cm longi. *Calycis* lobi glabri, breviter ciliati, ovati, obtusi, subpellucidi, 3 × 2 mm, squamellas complures latiusculas et longiusculas includentes. *Corolla* recta, subcampanulata, extus glabra, tubus pallide luteus, inferior 3.5 cm longus, prope basin 5 mm, prope faucem 2.5 mm latus, intus infra stamina pilosus, tubus superior 3.5 cm longus, in ore 1.4 cm latus, glaber, lobi patuli, late ovati, obtusi, 8 mm longi, 10 mm lati, glabri, flavi. *Antherae* in basi tubi superioris subsessiles, 5.5 × 1 mm, apice breviter acuminatae, basi truncatae, ad basin intus barbulatae. *Clavuncula* umbraculiformis, 2 mm alta, apice breviter apiculat et pilifer. *Stylus* 14 mm longus. *Ovarium* ovoideum, glabrum, 2 mm altum, 1.5 mm latum, bipartitum, squamis disci 5 subaequialtis papillosis circumdatum.

Vine; *leaves* coriaceous to subcoriaceous, glabrous, elliptic-oblong, long acuminate, the base cuneate, the midrib glanduliferous near the base of the blade. *Inflorescence* axillary, dichotomous, few-flowered. *Calyx* lobes glabrous, shortly ciliate, 3 mm long and 2 mm wide, the squamellae included. *Corolla* cream or white with a greenish to reddish base, straight, tubular campanulate above the narrowed 3.5–4-mm-long base, 7–8 cm long, glabrous outside, pubescent below the stamens inside. *Anthers* subsessile, inserted at the constriction in the middle of the tube, acuminate at apex and truncate at base. *Pistil* with clavuncle umbraculiform, 2 mm long, the style 14 mm long, the ovary ovoid, glabrous, 2 mm long and 1.5 mm wide, biparted, surrounded by 5 subequal squamellae. Fruit unknown.

Holotype: PANAMA. COLÓN: Santa Rita Ridge, 3 km N of Agua Clara rain gauge, lumber road, 19 Jan. 1973, *Dressler 4261* (Z; isotypes MO and to be distributed).

Additional collections examined: PANAMA. COLÓN: Santa Rita Ridge 4–5 miles from Trans-isthmian Highway, elev. 500–800 m, flowers cream with red base, fallen from canopy vine, 20 Sept. 1972, *Gentry 6104*. PANAMÁ: Road to Cartí, ca. 19 km from Pan-American Highway, vine, leaves dark green, calyx green, lower portion of tube pale green, upper portion and lobes white, flowers ca. 8 cm long, 20 Feb. 1973, *Kennedy 2520*. DARIÉN: Cerro Pavarando, inland from Jacqué, *Gentry s.n.* (collection of fallen corollas destroyed in Summit Herbarium fire).

The species is known from the tropical wet forest life zone of eastern Panama.

This species belongs to Woodson's section *Laxae* and is most closely related to the northern Andean species with truncate anthers (*M. equatorialis* Woods. and *M. versicolor* Woods. of Ecuador and *M. alboviridis* of Colombia).

The flower of *M. campanulata* is similar in shape to the flowers of these species but larger. The most closely related Panamanian species is *M. veraguasensis* (Seem.) Hemsl. with which *M. campanulata* would key out in the generic key in the *Flora of Panama*. However, the cuneate leaf base of *M. campanulata* is very different from the cordate one of other Panamanian species of *Mandevilla* so that it could not be placed to genus by use of the artificial key.

17. *Malouetia isthmica* Markgraf, sp. nov.

Arbor ad 10 m alta. *Ramuli* graciles, angulati, vix lenticellosi. Folia coriacea, opaca, 7–10 × 3–4 cm, glabra, elliptica, basi et apice acuminata, subtus secus costam conspicue

foveolata; petiolus 0.5 cm longus. *Nervi* laterales 6–8 paria, arcuati, indistincte coniuncti, tertiarii indistincti. *Inflorescentiae* axillares, multiflorae, umbelliformes, pedunculus 0.5 mm longus, pedicelli adulti 6–8 mm longi, bracteis navicularibus 0.7 mm longis suffulti. *Calyx* campanulatus, usque ad basin fissus, lobi foliacei, ovato-oblongi, obtusi, apice recurvi, extus puberuli. *Corollae* albae tubus 7 mm longus, glaber, a basi 2 mm lata in faucem 1 mm latam, intus gibbosam sensim angustatus, lobi oblongi, obtusi, 6 × 2.5 mm, supra usque ad ⅔ pilosi. *Antherae* 1.5 mm exsertae, 2.5 mm longae, sessiles, in dorso connectivi setosae, apice acutae, basi obtusae et incurvae, retinaculo crasso ad clavunculam obtuse ovoideam agglutinatae. *Stylus* 6 mm longus. *Ovarium* globosum, dense pubescens, 7 mm altum, bipartitum, squamis disci glabris, partim connatis, 3 mm altis circumdatum. *Mericarpia* glabra, divergentia, cylindracea, follicularia, longitudinaliter rimosa, immatura ad 14 cm longa, ½ cm lata. *Semina* semicylindrica, apice et basi breviter rotundato-acuminata, in ventre plana et sulco longitudinali instructa, in dorso convexa et longitudinaliter rimosa et ibi pilis 4 cm longis villosa, immatura 35 × 4 × 2 mm.

Tree to 10 mm tall, the branchlets slender, angulate. *Leaves* coriaceous or subcoriaceous, 7–10 cm long and 3–4 cm wide, glabrous, elliptic, acuminate, cuneate at base. *Inflorescence* axillary, many-flowered, paniculate. *Calyx* campanulate, split to the base, the lobes foliaceous, ovate-oblong, obtuse, recurved at the apex, puberulous. *Corolla* white, glabrous, the tube 7 mm long, the lobes 6 mm long, pubescent. *Anthers* sessile, 2.5 mm long, exserted 1.5 mm, setose on the dorsal connective, the apex acute, the base obtuse and incurved. *Pistil* with the style 6 mm long, the ovary globose, densely pubescent, 7 mm long, biparted, the squamellae glabrous, partly connate, 3 mm long. *Mericarps* glabrous, divergent at more than a 90 degree angle, cylindric, follicular, longitudinally striate, to 38 cm long and 0.6 cm wide. Seeds semicylindrical, rounded acuminate at apex and base, the underside flat, the upper side convex, villous.

Holotype: PANAMA. CANAL ZONE: Navy reservation north of Gamboa, tree 7 m tall; flowers white, 28 May 1972, *Dressler 4194* (Z; isotypes MO, PMA, NY).

Additional collection examined: PANAMA. COLÓN: Santa Rita Ridge, tree 10 m, 1 Mar. 1971, *Croat 13874* (MO, Z, and to be distributed).

This species is known from two collections, one from the tropical wet forest and the other from the premontane wet forest life zone.

Malouetia isthmica belongs in Woodson's section *Tamaquarinae* and to the group with foliaceous, spreading calyx lobes (Ann. Missouri Bot. Gard. 22: 238–270. 1935). The other species of this small alliance are known from northern South America (mostly Amazonian Brazil) and the West Indies. This is the first species of section *Tamaquarinae* to be recorded from Panama or North America. Its conspicuously exserted anthers and slender terete fruit distinguish *Malouetia isthmica* from *M. guatemalensis* (Muell.-Arg.) Standl., the other Panamanian species of the genus.

18. *Stenosolen holothuria* Markgraf, sp. nov.

Frutex glaber. Ramuli graciles, teretes, albo-grisei. *Folia* cuiusque secundi paris magnitudine diversissima, omnia membranacea in sicco flavescentia. *Petiolus* 1–2 mm longus, lamina elliptica, basi sinuato-angustata, apice longe acuminata, maiores 65 × 22 mm, minotes 20 × 7 mm. *Nervi* laterales arcuati, indistincte coniuncti, maiorum 6 paria, minorum 4 paria, tertiarii indistincti. *Inflorescentia* in bifurcatione ramulorum terminalis, brevis, uniflora. *Pedicellus* 5 mm longus. *Lobi* calycis 3 mm longi, 1 mm lati, ovato-lanceolati, glabri, intus glandulis paucis longiusculis instructi. *Corollae* albae, mox flavescentis tubus glaber, 10 mm longus, 1 mm latus, intus a fauce ad insertionem staminum setosus, lobi oblique securiformes,

acuti, 5 mm longi, prope faucem 2 mm lati et supra nonnullis setis pilosi. *Stamina* 1 mm supra basin tubi filamentis brevissimis inserta, glabra, antherae sagittiformes, angustae, apice aristatae, loculis ad basin divergentibus, 3 mm longae, 0.3 mm latae. *Clavuncula* longiuscule (0.5 mm) cylindrica, apice incrassata et breviter apiculata, basi 5-corniculata. *Stylus* 0.5 mm longus. *Ovarium* ovoideum, glabrum, 1 mm altum, 0.6 mm latum, bipartitum, pluriovulatum. *Fructus* apocarpus, modice carnosus, mericarpium reclinatum, lanceolatum, verrucis ad 3–4 mm elongatis obtectum (ideo holothuriae non dissimile), immaturum 4 × 1 × 0.8 cm. *Semina* biseriata, ad 10, ellipsoidea, arillo longitudinaliter sulcato induta, immatura 7 × 5 × 3 mm.

Glabrous *shrub*, the branchlets slender, terete. *Leaves* membranaceous, elliptic, long-acuminate at apex, the base cuneate, 20–70 cm long and 0.7–2.2 cm wide, drying yellowish green. *Inflorescence* terminal, one-flowered. *Calyx* lobes 2–3 mm long and 1 mm wide, ovate-lanceolate, glabrous. *Corolla* with the tube 10–14 mm long and 1 mm wide, the lobes 5 mm long. *Stamens* inserted 1 mm above the base of the tube, glabrous, the anthers sagittiform, narrow, the apex aristate, the locules divergent, 3 mm long. *Pistil* with clavuncle 0.5 mm long, cylindric, thickened at apex and shortly apiculate, 5-corniculate at base, the style 0.5 mm long, the ovary ovoid, glabrous, 1 mm long and 0.6 mm wide, biparted. *Fruit* apocarpus somewhat fleshy, the mericarps lanceolate, 4 cm long, 0.8–1 cm wide, verrucose-echinate, the projections 2–4 mm long and recurved at the tip. *Seeds* biseriate, ellipsoid, arillate.

Holotype: PANAMA. DARIÉN: Tumaganti, 18 Sept. 1967, *Duke 14149* (Z; isotypes F, MO, NY).

Additional collection examined: PANAMA. DARIÉN: Río Pirre, Apr. 1966, *Duke & Bristan 8266* (MO).

This species is apparently restricted to Darién Province, Panama.

This species belongs to the group characterized by distinct lateral enlargements of the corolla lobes. Geographically, the species of this group occurring nearest to Panama is *Stenosolen eggersii* Markgraf of the coastal region of Ecuador (cf. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 14: 177–178. 1938).

In flower *Stenosolen* resembles *Tabernaemontana* but can be separated by its usually one-flowered inflorescence and anthers inserted near the base of the corolla tube. The conspicuously verrucose-echinate fruit with numerous 2–4 mm long projections mostly recurved at the tips is unique among Panamanian Apocynaceae.

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I thank Dr. Robert Dressler for calling my attention to the Gómez-Pompa article on *Aspidosperma*. Dr. William D'Arcy has similarly called to my attention a paper by Stearn (Lloydia 29: 196–200. 1966) in which it is pointed out that the periwinkle commonly cultivated in Panama should be known as *Catharanthus roseus* (L.) G. Don rather than *Lochnera rosea* (L.) Reichenb. as used in the *Flora of Panama*.

—*A. H. Gentry, Missouri Botanical Garden.*